Effect of Cognitive Behavioral Intervention in Patients with Traumatic Optic Nerve Injury

Dandan Wang
Wuhan Aier Eye Hospital, Wuhan, Hubei, China

Abstract: Objective: To explore the clinical effect of applying cognitive behavioral intervention in patients with traumatic optic nerve injury. Methods: A total of 50 patients with traumatic optic nerve injury admitted to our hospital from January 2024 to October 2025 were selected for analysis. The selected patients were randomly divided into two groups using a random number table. The control group (n=25) received routine nursing intervention, while the observation group (n=25) received cognitive behavioral intervention. Comparisons between groups included: improvement of psychological status, nursing satisfaction, and improvement of quality of life. Results: The comparison of psychological status (SAS and SDS) scores between the two groups showed no significant differences before nursing (P>0.05). After nursing, the SAS and SDS scores of both groups decreased, and the scores of the observation group were lower than those of the control group, with statistically significant differences (P<0.05). Nursing satisfaction in the observation group was higher than that in the control group, and the difference was statistically significant (P<0.05). The comparison of quality-of-life scores between the two groups showed no significant differences before nursing (P>0.05). After nursing, the quality-of-life scores increased in both groups, and the scores of the observation group were higher than those of the control group, with statistically significant differences (P<0.05). Conclusion: Cognitive behavioral intervention has a significant effect in patients with traumatic optic nerve injury. It not only improves negative psychological states such as anxiety and depression but also increases patient satisfaction and contributes to improving quality of life, leading to good prognostic outcomes and worthy of wide clinical application. However, the number of samples included in this study is small, and the study period is relatively short; therefore, certain deviations may exist in the results. To obtain more accurate research findings, future studies should extend the research period and increase the sample size.

***Keywords*:** cognitive behavioral intervention; eye trauma; optic nerve injury

1. Introduction

Optic nerve injury is very common in clinical practice, and eye trauma is an important cause of this condition. It mainly refers to the impact of external force on the supraorbital ridge, which results in indirect injury. The clinical manifestations of optic nerve injury vary, including decreased vision, abnormal pupillary light reflex, and visual field defects. It severely affects the patient's vision and may even result in no light perception. Optic nerve injury can occur at all ages but is more common in young and middle-aged individuals. It has a sudden onset and easily induces various negative emotions among patients, including fear, anxiety, and depression. In severe cases, negative emotions may even lead to suicidal tendencies[1]. Therefore, during the treatment of patients with traumatic optic nerve injury, providing active nursing intervention is of great importance. Cognitive behavioral intervention is a method that enhances communication with patients and develops scientifically reasonable intervention measures based on patients' maladaptive behaviors and negative psychological stress responses[2]. Based on this, the present study selected 50 patients with traumatic optic nerve injury from January 2023 to April 2025 to explore the effects of cognitive behavioral intervention.

2. Data and Methods

2.1 General Information

A total of 50 patients with traumatic optic nerve injury admitted to our hospital were selected for analysis from January 2023 to April 2025. The patients were divided into two groups using a random number table method, with 25 cases in each group. In the control group, there were 13 males and 12 females, with an age range of 26–59 years and an average age of (32.72±2.82) years. Causes of injury included traffic accidents (10 cases), boxing injuries (10 cases), and falls (5 cases). Left-eye and right-eye injuries occurred in 14 and 11 cases, respectively. In the observation group, there were 14 males and 11 females, with an age range of 28–61 years and an average age of (32.82±2.79) years. Causes of injury included traffic

accidents (9 cases), boxing injuries (9 cases), and falls (7 cases). Left-eye and right-eye injuries occurred in 13 and 12 cases, respectively. Comparisons of general information, including gender, age, cause of injury, and injured eye laterality, showed no significant differences (P>0.05).

Inclusion criteria: (1) diagnosed with traumatic optic nerve injury; (2) complete clinical data; (3) no malignant tumors or mental disorders other than ophthalmic diseases; (4) normal communication ability; (5) signed informed consent.

Exclusion criteria: (1) poor compliance; (2) impaired consciousness; (3) severe dysfunction of other organs; (4) presence of malignant tumors.

2.2 Methods

Routine nursing interventions, including correct medication guidance, close monitoring of the condition, and daily life guidance, were applied to the control group.

The observation group received cognitive behavioral intervention, and a cognitive behavioral nursing intervention team was established. Team members were required to have rich experience, and the team leader was the head nurse of the ophthalmology department. Before carrying out nursing work, team members underwent training and assessment, and only those who passed the assessment were allowed to take up their positions.(2) Cognitive Intervention.① After patients were admitted to the hospital, medical staff carefully listened to their chief complaints, assessed their psychological status, strengthened communication, guided negative emotions, and encouraged patients to actively receive treatment.② Communication was conducted with patients to explain the principles and requirements of cognitive behavioral nursing. Cognitive and behavioral therapy were integrated to correct patients' false cognitions and unhealthy lifestyles.③ After admission, supervision and management were strengthened. For patients receiving treatment who exhibited negative emotions, cognitive modification was carried out to correct cognitive biases and improve psychological status.④ Before treatment, psychological education was provided during cognitive nursing. Psychological counseling was delivered according to the patient's actual condition, giving patients adequate care and support. Various methods were used to inform patients about the causes of the disease, clinical manifestations, treatment options, and prognosis. After explanations, questions were asked to deepen patients' understanding of the disease. Meanwhile, successful treatment cases were presented to encourage communication and mutual support among patients, alleviating negative emotions, ensuring smooth treatment, and improving treatment compliance.(3) Social Support and Peer Education.Negative emotions can affect treatment compliance and rehabilitation; therefore, patients' needs should be met as much as possible. Family visits were encouraged to stabilize the patient's condition and rebuild confidence in recovery and daily life.

2.3 Observation Indicators

(1) The psychological status of patients in the control group and the observation group was compared. Evaluation methods included the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS). Both scales have a total score of 100 points, with an upper limit of 50 points for SAS and 53 points for SDS. Higher scores indicate worse psychological status.

(2) Nursing satisfaction of patients in the control group and the observation group was compared. A self-designed nursing satisfaction scale was used for evaluation, with a total score of 100 points. Scores >90 indicated "very satisfied," 70–89 indicated "satisfied," and ≤69 indicated "dissatisfied." Satisfaction rate = 1 − dissatisfaction rate[3].

(3) The quality of life of the two groups before and after nursing was compared. The SF-36 Quality-of-Life Scale was used for evaluation, which includes four dimensions, each scored from 0 to 100 points. The score is positively correlated with quality of life[4].

2.4 Statistical Methods

SPSS 24.0 software was used to analyze the differences between groups. Body weight, body mass index, blood pressure, and blood lipids were continuous variables with normal distribution and were expressed as ($\bar{x}\pm s$); the t-test was used for analysis. Qualitative data were expressed as n (%) and analyzed using the x^2 test. A value of P<0.05 indicated statistical significance.

3. Results

3.1 Improvement of Psychological Status

The psychological status of the observation group improved more significantly after nursing, and the difference was statistically significant (P<0.05). See Table 1.

Table 1. Comparison of Psychological Status Between the Two Groups ($\bar{x}$±s)

Group	n	SAS		SDS	
		Before Nursing	After Nursing	Before Nursing	After Nursing
Control Group	25	52.46±8.77	45.04±8.39*	51.28±9.42	49.14±8.79*
Observation Group	25	51.79±9.15	39.15±8.97*	51.63±8.82	41.77±8.35*
t	-	0.264	2.398	0.136	3.039
P	-	0.793	0.020	0.893	0.004

Note: Compared with the same group before nursing, * indicates P<0.05.

3.2 Comparative Analysis of Nursing Satisfaction Between the Two Groups

See Table 2 for comparison of nursing satisfaction between the two groups.

Table 2. Comparison of Nursing Satisfaction [n (%)]

Group	n	Dissatisfied	Satisfied	Very Satisfied	Nursing Satisfaction
Control Group	25	8 (32.00)	10 (40.00)	7 (28.00)	17 (68.00)
Observation Group	25	2 (8.00)	8 (32.00)	15 (60.00)	23 (92.00)
x^2	-	-	-	-	6.327
P	-	-	-	-	0.012

3.3 Quality of Life

The quality-of-life scores increased in both groups after nursing, and the observation group showed higher scores than the control group (P<0.05). See Table 3.

Table 3. Comparative Analysis of Quality of Life Between the Two Groups [$\bar{x}$±s, points]

Group	n	Cognitive Function		Role Function		Physical Function		Social Function	
		Before Nursing	After Nursing	Before Nursing	After Nursing	Before Nursing	After Nursing	Before Nursing	After Nursing
Control Group	25	60.56±5.43	71.57±7.16*	62.36±5.44	73.12±4.63*	59.69±4.24	72.57±5.43*	61.27±5.35	70.23±5.47*
Observation Group	25	60.24±4.78	81.27±5.38*	62.46±5.83	82.16±4.93*	58.92±4.78	81.24±6.68*	61.36±5.83	80.76±6.35*
t	-	0.221	5.634	0.063	6.683	0.603	5.036	0.067	6.282
P	-	0.826	<0.001	0.950	<0.001	0.549	<0.001	0.955	<0.001

Note: Compared with the same group before nursing, * indicates P<0.05.

4. Discussion

The results of this study indicated that SAS and SDS scores decreased in both groups after nursing, with the observation group showing lower scores than the control group; nursing satisfaction in the observation group was higher than that in the control group; and quality-of-life scores increased in both groups after nursing, with the observation group scoring higher than the control group. These findings suggest that cognitive behavioral intervention has a significant effect in patients with traumatic optic nerve injury. It not only improves negative psychological states such as anxiety and depression, but also increases patient satisfaction and contributes to improving quality of life.The underlying reasons are as follows: cognitive behavioral nursing is a novel nursing method that primarily intervenes in patients' behavior and cognition, focusing on patients' perception, thinking, judgment, and emotions[5]. Cognitive behavioral nursing can help patients correct erroneous disease-related cognitions, establish a correct understanding of the disease, and adjust psychological status[6]. Meanwhile, it assists patients in adjusting their thinking patterns, which is beneficial for improving negative thinking, cultivating positive thinking, and strengthening psychological adaptability and coping ability, thereby alleviating negative emotions[7]. In addition, cognitive behavioral nursing helps patients master disease treatment methods and management measures, enhancing self-management ability, promoting post-treatment recovery, reducing complications, and improving quality of life[8].

In summary, cognitive behavioral intervention has a significant effect in patients with traumatic optic nerve injury. It not only improves negative psychological states such as anxiety and depression, but also increases patient satisfaction and contributes to improving quality of life, leading to favorable prognostic outcomes and warranting wide clinical application.

However, the sample size in this study was small, and the study period was relatively short, which may have introduced some deviations in the results. To obtain more accurate findings, future studies should extend the research period and increase the sample size.

References

[1] Liu Fei, Yang Dandan, Xiong Xin. Protective effect and mechanism of ginkgolide on retinal ganglion cells in rats with optic nerve injury [J]. Ophthalmology Progress, 2025, 45(12): 956-961.

[2] Yan, Wei; Lin, Jingquan; Hu, Wanglu, et al. Combination analysis on the impact of the initial vision and surgical time for the prognosis of indirect traumatic optic neuropathy after endoscopic transnasal optic canal decompression [J]. Neurosurgical Review, 2021, 44(2): 945-952.

[3] Han Yiyan, Zheng Qu, Zhao Lei, et al. Protective effect of Qingxiang glycoside I on retinal ganglion cells in rabbit model of optic nerve injury through ROS-mediated mitochondrial apoptosis pathway [J]. Chinese Journal of Clinical Pharmacology, 2025, 41(07): 977-982.

[4] He Liye, Zhang Haijiang. Effect of salvianolic acid on optic nerve injury in glaucoma rats via regulation of the Keap1-Nrf2 pathway [J]. Chinese Journal of Cell Biology, 2025, 47(10): 2549-2557.

[5] Yang Yang, Wan Wei, Wang Yaqi, et al. Correlation between serum miR-21 and miR-15b expression levels and the degree of optic nerve injury and inflammatory response in patients with primary open-angle glaucoma [J]. Journal of Difficult and Complicated Diseases, 2025, 24(03): 343-348.

[6] Chen Jiahao, Li Zhengze, Wang Wei, et al. Protective effect and mechanism of dihydroquercetin on optic nerve injury [J]. Ophthalmology Progress, 2025, 45(10): 793-798+804.

[7] He Gaojun, Xu Xiaofeng, Li Mingjiang. Decision tree model for severity of optic nerve injury in POAG patients based on IL-6 and IL-2 levels in aqueous humor [J]. International Journal of Ophthalmology, 2025, 25(03): 384-389.

[8] Huang Yu, Li Danyang, Zhou Yasha, et al. Experience of ophthalmologist Peng Qinghua in treating optic nerve injury in glaucoma [J]. Journal of Hunan University of Traditional Chinese Medicine, 2025, 45(07): 1310-1314.